Argonne NATIONAL LABORATORY

# ALCF Resources
## Leadership-Class Systems


### Intrepid

- Production scientific and engineering computing
- 40,960 quad-core compute nodes
- 163,840 cores
- Memory: 80 terabytes
- Peak Performance: 557 teraflops

### Surveyor

- Tool and application porting, software testing and optimization, and systems software development
- 1,024 quad-core nodes
- 4,096 cores
- Memory: 2 terabytes
- Peak Performance: 13.9 teraflops

### Gadzooks

- Test and development for visualization
- 4 compute nodes: each with (2) 2.0 GHz quad-core Xeon servers with 32 GB RAM
- 8 NVIDIA Quadro FX5600 GPUs in 2 S4s

### Eureka

- Visualization and data analytics to transform data into useful knowledge
- 100 compute nodes: each with (2) 2.0 GHz quad-core Xeon servers with 32 GB RAM
- 200 NVIDIA Quadro FX5600 GPUs in 50 S4s
- Memory: More than 3.2 terabytes of RAM
- Peak Performance: More than 111 mostly single precision teraflops of computation use a fraction of electricity compared to alternative architectures.

### Data storage

The supercomputer's data systems consist of 640 I/O nodes that connect to 16 storage area networks (SANs) that control 7,680 disk drives with a total capacity of 7.6 petabytes of raw storage and a maximum aggregate transfer speed of 88 gigabytes per second. The ALCF uses two parallel file systems—PVFS and GPFS—to manage the storage. An HPSS automated tape storage system provides archival storage.

Current tape capacity installed and available is 6500 tapes at 800 GB raw, in a 10,000 slot library. A second 10,000 slot library and 9500 tapes have been installed in the TCS and should enter production early in 2010.



### The Blue Gene is Green

The Blue Gene/P uses about one-third as much electricity as a machine of comparable size built with more conventional parts. Of general-purpose, homogeneous architecture supercomputers, the Blue Gene/P is the most power efficient. And, by leveraging the Chicago area's cold winters to chill the cooling system water for free, the ALCF saves millions of dollars a year in electrical power costs over similarly sized supercomputer centers.

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